Abstract

A trench-gated MOSFET includes adjacent mesas formed on opposite sides of a trench. A body region in the first mesa extends downward below the level of the trenches and laterally across the bottom of the trenches. The body region in the second mesa extends part of the way down the mesa, leaving a portion of the drain abutting the trench. The body region in the second mesa includes a channel region adjacent a wall of the trench. The area where the drain abuts the trench is thus relatively restricted and the drain-gate capacitance of the device is reduced. Moreover, the drain-gate capacitance is made independent of the depth and width of the trenches, allowing greater freedom in the design of the MOSFET.